

Hoechst Aktiengesellschaft

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5 Patent Claims What is claimed is

1. Recognition system comprising
(a) at least one immobilized binding component A having at least one binding site for the recognition species B and
(b) at least one recognition species B which can bind to the binding component A and contains at least one binding site for a substrate S, characterized in that the binding of the binding component A to the recognition species B takes place in the form of a molecular pairing system.
2. Recognition system according to Claim 1, characterized in that the pairing system is a complex which is formed by association of the binding component A with the recognition species B via non-covalent interactions.
3. Recognition system according to Claim 2, characterized in that the non-covalent interactions are selected from hydrogen bridges, salt bridges, stacking, metal ligands, charge-transfer complexes and hydrophobic interactions.
4. Recognition system according to ^{claim 1} ~~one of Claims 1-3~~, characterized in that the molecular pairing system contains a nucleic acid and its analogues.
5. Recognition system according to Claim 4, characterized in that the nucleic acids and their analogues is a pentose, preferably a pentopyranose or pentofuranose.
6. Recognition system according to Claim 5, characterized in that the pentose is selected from a ribose, arabinose, lyxose or xylose.
7. Recognition system according to ^{claim 4} ~~one of Claims 4-6~~, characterized in that the nucleic acid and its analogues is selected from pyranosyl-RNA (p-RNA), nucleic acid having one or more aminocyclohexylethanoic acid (CNA) units, peptide nucleic acid (PNA), or a nucleic acid having one or more [2-amino-4-(carboxymethyl)cyclohexyl]nucleobases.

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8. Recognition system according to ^{claim 4} ~~one of Claims 4-7~~, characterized in that the nucleobase of the nucleic acid or its analogues is selected from purine, 2,6-diaminopurine, 6-purinethiol, pyridine, pyrimidine, adenine, guanine, isoguanine, 6-thioguanine, xanthine, hypoxanthine, thymidine, cytosine, isocytosine, indole, tryptamine, N-phthaloyltryptamine, uracil, caffeine, theobromine, theophylline, benzotriazole or acridine.
9. Recognition system according to ^{claim 4} ~~one of Claims 4-8~~, characterized in that the nucleic acid analogues are selected from ribopyranosyladenosine, ribopyranosylguanosine, ribopyranosylthymidine, ribopyranosylcytosine, ribopyranosyltryptamine or ribopyranosyl-N-phthalotryptamine, ribopyranosyl-uracil or their 2-amino-4-(carboxymethyl)ribopyranosyl] derivatives.
10. Recognition system according to ^{claim 4} ~~one of Claims 4-9~~, characterized in that the length of the nucleic acid and its analogues is at least about 4-50, preferably at least about 4-25, in particular at least about 4-15, especially at least about 4-10, nucleotides.
11. Recognition system according to ^{claim 1} ~~one of Claims 1-10~~, characterized in that the binding component A is immobilized on a carrier.
12. Recognition system according to Claim 11, characterized in that the carrier is selected from ceramic, metal, in particular noble metal, glasses, plastics, crystalline materials or thin layers of the carrier, in particular of the materials mentioned, or (bio)molecular filaments, such as cellulose, structural proteins.
13. Recognition system according to Claim 11 ~~or 12~~, characterized in that the binding component A is immobilized on a carrier by means of a covalent bond, quasi-covalent bond or supramolecular bond by association of two or more molecular species such as molecules of linear constitution, in particular peptides, peptoids, proteins, linear oligo- or polysaccharides, nucleic acids and their analogues, or monomers such as heterocycles, in particular nitrogen heterocycles, or molecules of non-linear constitution such as branched oligo- or polysaccharides or antibodies and their functional moieties (such as Fv fragments, single-chain Fv fragments (scFv) or Fab fragments).

- claim 11

claim 1

claim 4

claim &
one of Claims 1

~~species B1, B2 ... Bn, which is immobilized on the immobilized binding component A, and~~

~~(b) at least (n+3) different recognition species B1, B2 ... B(n+3), where n is an integer from 0-20, preferably 0-10, in particular 0-5, especially 0 or 1.~~

22. Recognition system according to Claim 21, characterized in that the recognition species B1, B2 ... Bn originates from a substance library.

23. Recognition system according to Claim 21 ~~or 22~~, characterized in that the structure of the recognition species B(n+3) is known.

24. Recognition system according to ~~one of Claims 19-23~~ ^{claim 19}, characterized in that the different recognition species B recognize the same substrate S.

25. Recognition system according to Claim 24, characterized in that the substrate S is selected from molecules, preferably pharmaceuticals and plant protection active compounds, metabolites, physiological messenger substances, derivatives of lead structures, substances which are produced or produced to an increased extent in the human or animal body in the case of pathological changes, or transition state analogues, or peptides, peptoids, proteins such as receptors or functional moieties thereof such as the extracellular domain of a membrane receptor, antibodies or functional moieties thereof such as Fv fragments, single-chain Fv fragments (scFv) or Fab fragments, or cell constituents such as lipids, glycoproteins, filament constituents, or viruses, viral constituents such as capsids, or viroids, or their derivatives such as acetates, or monomers such as heterocycles, in particular nitrogen heterocycles, or molecules of non-linear constitution such as branched oligo- or polysaccharides, or substance libraries such as ensembles of structurally differing compounds, preferably oligomeric or polymeric peptides, peptoids, saccharides, nucleic acids, esters, acetals or monomers such as heterocycles, lipids, steroids, or target structures for pharmaceuticals, preferably pharmaceutical receptors, voltage-dependent ion channels, transporters, enzymes or biosynthesis units of microorganisms.

26. Recognition system according to ~~one of Claims 1-25~~ ^{claim 1}, characterized in that it is an immunoassay.

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